Patent Claims

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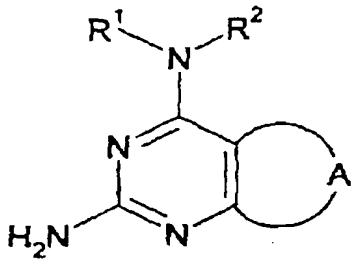
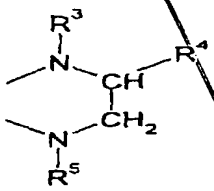
1. Compounds of the formula I



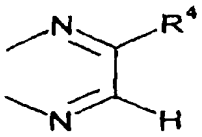
(I)

in which

A is a bridge of the formula



or



R^1 is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, cycloalkylalkyl, aryl, alkylaryl or arylalkyl, where the organic radicals may be substituted by one or more substituents,

R^2 is, independently of R^1, alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, cycloalkylalkyl, aryl, alkylaryl or arylalkyl, where the organic radicals may be substituted by one or more substituents,

R^1 and R^2 may, together with the nitrogen atom bearing them, form a 3-8-membered ring which may optionally contain 0, 1 or 2 further heteroatoms from the series N, O, S and which is optionally substituted by one or more radicals,

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R^3 is hydrogen, -CO-alkyl, -CO-alkylaryl or -CO-aryl,

R^4 is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, cycloalkylalkyl, aryl or alkylaryl, arylalkyl, -CO-O-alkyl, -CO-O-aryl, -CO-alkyl -CO-aryl, where the organic radicals may be substituted by one or more substituents,

R^5 is, independently of R^3, hydrogen, -CO-alkyl, -CO-alkylaryl or -CO-aryl,

R^6 is -F, -OH, -O-(C_1-C_{10})-alkyl, -O-phenyl, -O-CO-(C_1-C_{10})-alkyl, -O-CO-aryl, $-NR^8R^9$, oxo, phenyl, -CO-(C_1-C_5)-alkyl, $-CF_3$, -CN, $-CONR^8R^9$, -COOH, -CO-O-(C_1-C_5)-alkyl, -CO-O-aryl, $-S(O)_n$-(C_1-C_5)-alkyl, $-SO_2-NR^8R^9$,

R^7 has, independently of R^6, one of the meanings of R^6,

R^8 is hydrogen or alkyl,

R^9 is hydrogen, alkyl or aryl,

in all its stereoisomeric and tautomeric forms and mixtures thereof in all ratios, and its physiologically acceptable salts, hydrates and esters.

2. Compounds of the formula I as claimed in claim 1, in which

R^1 is hydrogen, (C_1-C_{10})-alkyl, (C_3-C_8)-cycloalkyl, cycloalkylalkyl, aryl or (C_1-C_3)-alkylaryl or arylalkyl, where the alkyl radicals may be substituted by one or more substituents R^6,

R^2 is, independently of R^1, (C_1-C_{10})-alkyl, (C_3-C_8)-cycloalkyl, cycloalkylalkyl, aryl or (C_1-C_3)-

contd. a 2

alkylaryl, where the alkyl radicals may be substituted by one or more substituents R^6,

R^1 and R^2 may, together with the nitrogen atom bearing them, form a 3-8-membered ring which may optionally contain 0, 1 or 2 further heteroatoms from the series N, O, S and which is optionally substituted by one or more R^6 radicals,

R^3 is hydrogen, -CO-(C_1-C_7)-alkyl, -CO-(C_1-C_3)-alkylaryl or -CO-aryl,

R^4 is (C_1-C_{10})-alkyl, aryl or (C_1-C_3)-alkylaryl, -CO-O-(C_1-C_5)-alkyl, -CO-O-aryl, -CO-(C_1-C_5)-alkyl or -CO-aryl, where the alkyl radicals may be substituted by one or more substituents R^7,

R^5 has, independently of R^3, one of the meanings of R^3,

R^6 is -F, -OH, -O-(C_1-C_{10})-alkyl, -O-phenyl, -O-CO-(C_1-C_{10})-alkyl, -O-CO-aryl, $-NR^8R^9$, oxo, phenyl, -CO-(C_1-C_5)-alkyl, $-CF_3$, -CN, $-CONR^8R^9$, -COOH, -CO-O-(C_1-C_5)-alkyl, -CO-O-aryl, $-S(O)_n$-(C_1-C_5)-alkyl, $-SO_2-NR^8R^9$,

R^7 has, independently of R^6, one of the meanings of R^6,

R^8 is hydrogen or (C_1-C_5)-alkyl,

R^9 is hydrogen, (C_1-C_5)-alkyl or phenyl,

aryl is phenyl, naphthyl or heteroaryl, all of which may be substituted by one or more identical or different substituents from the series halogen, (C_1-C_5)-alkyl or phenyl, -OH, -O-(C_1-C_5)-alkyl, (C_1-C_2)-alkylenedioxy, $-N^8R^9$, $-NO_2$, -CO-(C_1-C_5)-alkyl,

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CF_3, -CN, $-CONR^8R^9$, -COOH, $-CO-O-(C_1-C_5)$-alkyl, $-S(O)_n-(C_1-C_5)$-alkyl, $-SO_2-NR^8R^9$,

heteroaryl is a 5- to 7-membered unsaturated heterocycle which contains one or more heteroatoms from the series O, N, S,

n is 0, 1 or 2,

in all its stereoisomeric and tautomeric forms and mixtures thereof in all ratios and its physiologically acceptable salts, hydrates and esters.

3. Compound of the formula I as claimed in claim 1, in which

R^1 is hydrogen, (C_2-C_4)-alkyl which may be substituted by one or more substituents R^6, or (C_1-C_2)-alkylaryl,

R^2 is (C_2-C_4)-alkyl which may be substituted by one or more substituents R^6, or cyclohexylmethyl or (C_1-C_2)-alkylaryl,

or R^1 and R^2 form, together with the nitrogen atom bearing them, a 5-7-membered ring which optionally contains no or another heteroatom from the series N, O, S,

R^3 is hydrogen, $-CO-(C_1-C_3)$-alkyl or -CO-aryl,

R^4 is aryl, (C_1-C_5)-alkyl or -CO-O-aryl, each of which may be substituted by one or more substituents R^7,

R^5 is hydrogen,

R^6 is -OH, $-O-(C_1-C_3)$-alkyl, $-NR^8R^9$ or -COOH,

R^7 is -OH, (C_1-C_{10})-alkyloxy, phenoxy or oxo,

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aryl is phenyl, thienyl, furyl or pyridyl, each of which may be substituted by one or more substituents from the series (C_1-C_3)-alkyl, halogen, (C_1-C_3)-alkyloxy and (C_1-C_2)-alkylenedioxy, and

R^8 and R^9 have the meanings stated in claim 1,

in all its stereoisomeric and tautomeric forms and mixtures thereof in all ratios and its physiologically acceptable salts, hydrates and esters.

4. Compounds of the formula I as claimed in claim 1, in which

R^1 is arylmethyl and

R^2 is arylmethyl or cyclohexylmethyl,

or R^1 and R^2 form, together with the nitrogen atom bearing them, a pyrrolidine, piperidine, morpholine, dimethylmorpholine, thiomorpholine, or N-(C_1-C_2)-alkylpiperazine ring,

R^3 is hydrogen,

R^4 is alkyl or 1,2-dihydroxypropyl,

R^5 is hydrogen,

R^6 is -OH, -O-(C_1-C_3)-alkyl, $-NR^8R^9$ or -COOH,

R^7 is -OH, decyloxy and phenoxy,

aryl is phenyl which may be substituted by one or more substituents from the series (C_1-C_3)-alkyl, halogen and (C_1-C_3)-alkyloxy and (C_1-C_2)-alkylenedioxy, and

contd. a2

R^8 and R^9 have the meanings stated in claim 1,

in all its stereoisomeric and tautomeric forms and mixtures thereof in all ratios and its physiologically acceptable salts, hydrates and esters.

5. Compounds of the formula I as claimed in claim 1, which is a tetrahydropteridine in which R^4 is aryl, (C_1-C_5)-alkyl or -CO-O-aryl, each of which may be substituted by one or more substituents R^7.

6. Compounds of the formula I as claimed in claim 1, which is a pteridine in which R^1 and R^2 are alkyl and/or aryl, or in which R^1 is hydrogen and R^2 is cycloalkyl or cycloalkylalkyl, and in which R^4 is aryl, (C_1-C_5)-alkyl or -CO-O-aryl, each of which may be substituted by one or more substituents R^7.

7. A pharmaceutical comprising a compound of the formula I as claimed in claim 1 in addition to conventional excipients and additives and optionally further active ingredients.

8. A pharmaceutical as claimed in claim 7 for the therapy and prophylaxis of strokes, pathological falls in blood pressure, in particular in septic shock and in cancer therapy with cytokines, ulcerative colitis, transplant rejection reactions, nephritis, reperfusion damage, infarct damage, cardiomyopathy, Alzheimer's disease, epilepsy, migraine and neuritis of varying etiogenesis.

9. A pharmaceutical as claimed in claim 7 as inhibitor of NO synthase.

10. The use of the pharmaceutical as claimed in ~~claim 9 for diagnostic~~ purposes.

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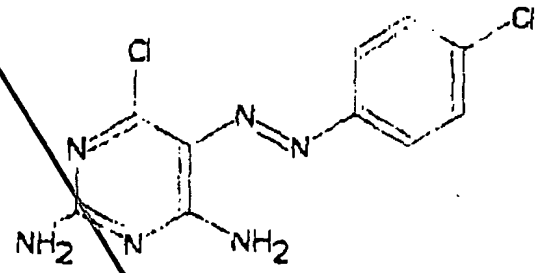
11. A process for preparing a compound of the formula I as claimed in claim 1, by reacting a compound of the formula II

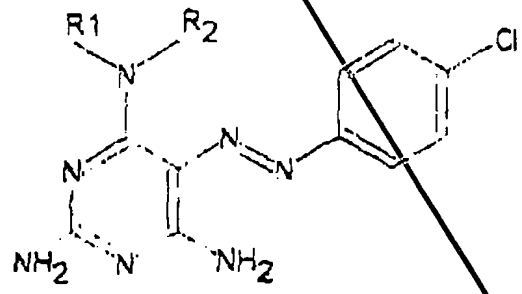


(II)

with a compound of the formula III

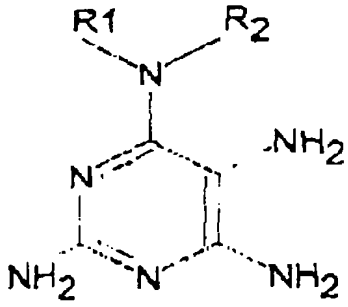
HNR^1R^2 (III)

to give a compound of the formula IV



(IV)

and converting the latter by catalytic hydrogenation into a compound of the formula V



(V)

which is reacted with a compound of the formula VI

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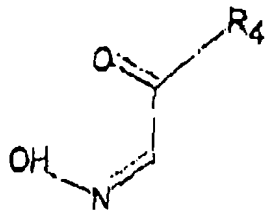
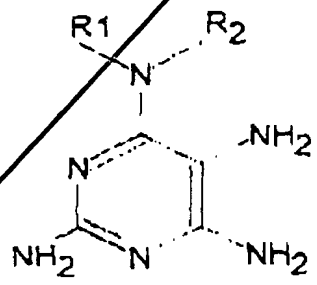


(VI)

to give a compound of the formula I, which can be converted by suitable derivatization, preferably acylation, into the desired compound of the formula I or its physiologically acceptable salts, hydrates, esters and adducts, and in which the substituents have the meanings stated in claims 1 to 3.

12. A compound of the formula V



(V),

~~in which R^1 and R^2 have the meaning defined in claim 1.~~

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